Business Innovation Facility

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Inclusive business in practice – Case studies from the Business Innovation Facility portfolio

MEGA: A commercial approach to off-grid power in rural Malawi

This report is one of a series of 'deep dive' case studies that seeks to understand inclusive business in practice. The series explores contrasting inclusive businesses, all of which have been supported by the Business Innovation Facility.

SKOLL CENTRE FOR SOCIAL ENTREPRENEURSHIP
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Foreword: An introduction from the authors

Night falls early on Mount Mulanje. At five thirty, the sun has set and the local school in Bondo village is dark. After a day's farming or working at a nearby maize mill, the people of the village light their homes with candles, log fires, kerosene lanterns or battery-powered lamps. While these energy sources provide families with one or two hours of light in which to read and cook, they are becoming increasingly expensive as a result of high inflation.

Lack of access to energy services has other implications for the local communities of Mount Mulanje. It is rare, for instance, to find teachers willing to live in an area without electricity. In Bondo village, schools have had to turn down computers from the Ministry of Education because there is no electricity to run them. Even the local health centre is resource-constrained to the point that women in childbirth were asked to bring their own candles to light the delivery.

Malawi's national grid does not meet the demands of the country. Many people live under electricity cables and pylons but these carry power to the privileged few. The majority of the population access traditional energy sources which deforest the countryside. Less than nine per cent of all households – and only one per cent of rural households – have access to electricity. With 80 per cent of the country's population living in rural areas[1], the number of people without access to modern energy services is very high. In a country like Malawi, where an estimated 74 per cent of the population live below the poverty line ($1.25 per day), lack of access to energy services affects health, limits opportunities for education and growth and deepens the vulnerability of the already poor.

During the summer of 2013, we had the opportunity to visit MEGA – Mulanje Electricity Generation Agency. This ambitious inclusive business has a vision to tackle this challenge and supply the communities of Mount Mulanje with energy that is *'widely available and reliable at an affordable cost and supplied in an environmentally and financially sustainable business model.'*

MEGA was first talked about in 2008 when the Executive Director of a local conservation NGO, Mount Mulanje Conservation Trust (MMCT), Carl Bruessow, proposed applying a business approach to a micro-hydro project in Bondo village funded by the European Commission. The vision was to develop a sustainable business scheme which could achieve expansion and effective provision of electricity to the wider Mulanje area at the same time as ensuring watershed protection on Mount Mulanje through community engagement and action. The implementation of this concept has been achieved through involvement of financial and technical support from a number of public and private donors, and five years since inception, the first bulbs were alight in Bondo village.

Acknowledgements

We would like to acknowledge all of the people who helped create this report (listed in alphabetical order). Carl Bruessow of MMCT and MEGA, Nicholas Dzadza of Practical Action, Rachel Godfrey, Ben Friday, Vincent Gondwe of MuREA, Chief Kalamwa, Clement Kalonga of Practical Action, Joseph Kalowekamo, Anthony Kodo of MERA, Emmanuel Mjimapemba of Practical Action, Mr. Harrison Palapanou (Headmaster of Secondary School for Bondo Villages), Head Village Master Sulupi, Georgina Turner of the Business Innovation Facility, Elise Wach of the Institute of Development Studies, the entire staff at the MuREA offices in Mulanje Mountain, the staff at Imani Development, the numerous Chiefs and Community Members who provided input during the fieldwork on Mulanje Mountain, and all others who were involved in this process. The case study would not have been possible without invaluable support from Karen Smith, BIF Malawi Country Manager and Duncan White, during the review and editing process.

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[1] http://www.heliosse.com/projects/malawi

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"Everyone is happy, happy, happy. Just this one light bulb to make light for all of these people."
Chief Kalamwa

Table of Acronyms

BIF	Business Innovation Facility
BoP	Base of Pyramid
MEGA	Mulanje Electricity Generation Agency
MERA	Malawi Energy Regulation Authority
MMCT	Mulanje Mountain Conservation Trust
MuREA	Mulanje Renewable Energy Agency
PA	Practical Action – an international NGO with technical engineering expertise.
EC	European Commission – the financing donor of Phase 1

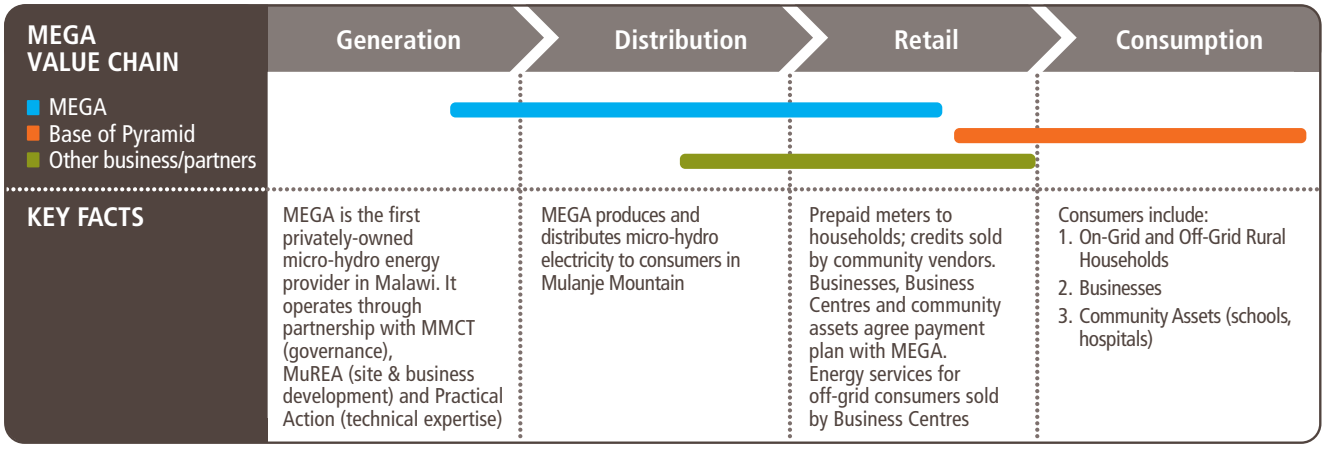
Executive summary

Malawi is one of the poorest countries in the world. Its population faces significant social, economic, environmental and developmental challenges including lack of access to modern energy services. The national grid fails to service an estimated 99 per cent of the country's rural population. Bottom of the Pyramid (BoP) households spend a disproportionally high percentage of household income on alternative fuels such as kerosene, wood and charcoal. These fuels contribute to poor lung and eye health due to emissions. The lack of electricity limits the quality of health and education services, and constrain opportunities to grow small businesses. The repercussions of widespread deforestation to supply household energy are immense and cut across health, livelihood and environmental impacts.

Mulanje Electricity Generation Agency (MEGA) is an innovative inclusive business aiming to transform this situation for households living in mountainous areas with fast flowing water, where there is potential for micro-hydro power generation. MEGA is a start-up company providing energy to off-grid low-income households. It targets a potential market of 520,000 people in the Mount Mulanje area who will be able to access energy services, of which 9,600 households (42,420 men, women and children) are expected to be directly connected.

MEGA is a social enterprise and the first operational private energy company in Malawi. Its business model focuses on making energy available and affordable to its target market – promoting price minimisation, rather than 'traditional' profit maximisation, within the parameters of building a financially sustainable business. Support from the Business Innovation Facility has been focused on helping MEGA to develop its business model and company infrastructure. A simplified value chain and key facts of MEGA's operational model are outlined in Figure 1.

Figure 1: *Simplified MEGA Value Chain*



Consumers of the electricity generated are individual households and community services, both government and private, such as the clinic and maize mill.

In July 2013, MEGA's first micro-hydro scheme at Lower Bondo on the Lichenya River became partially operational and the community are starting to see results – and opportunities. Power is now being distributed to households, shops and one government health clinic. Businesses are achieving greater turnover due to extended trading hours enabled by lighting. New enterprises are being set up. Bondo's school has nearly doubled the number of teachers on its books. However, these successes are not without their challenges: revenue collection is yet to be fully operationalised and the Department of Education is not able to provide funds to wire the school.

Lower Bondo is the first site to be established in MEGA's 10-year business plan to establish 10 micro-hydro mini-grid systems – one per year. Lower Bondo alone aims to provide direct benefits to 427 households (approximately 1,880 people). A total of 3,000 people will benefit indirectly through access to secondary energy services and improved community assets. Phase 2 will see two additional sites being commissioned (surveying and development currently underway), benefitting 3,000 households (13,200 people) directly and up to 27,000 people indirectly.

The critical challenge facing MEGA is to reach scale and operational financial sustainability whilst adhering to its founding principles of providing affordable, available, sustainable electricity to BoP consumers. MEGA's financial projections predict operational break-even in Year 6, after the fifth micro-hydro turbine is commissioned. Donor grant funding is needed to build and commission each site, totalling approximately $2mn in the first five years and $1.4mn for the second five years. Over $1mn has already been spent on the first site and surveys for sites two and three.

MEGA has a clear action plan for revenue collection and, at July 2013, is waiting for delivery of imported pre-payment smart-meters to enable commencement of this. Once revenue is being collected, a gross margin of around $37,000 is anticipated from site operations in the first 12 months. The site operation gross margin is forecast to grow year-on-year, reaching almost $200,000 in Year 10.

MEGA, as it grows to operate at scale, will rely on significant public funding and/or ethical commercial capital to develop and commission sites. MEGA faces particular challenges as upfront infrastructure investment is high and largely charged in US dollars while the potential tariffs are limited by consumers' ability to pay and are largely in Malawian Kwacha. The availability of appropriate human and technical capacity locally is also a challenge.

If MEGA is able to achieve and maintain momentum, there is potential to influence the wider energy landscape in Malawi, paving the way for further investment in private energy provision. MEGA's development has challenged the Malawian administration to review their current licencing frameworks for privately owned energy companies. The new energy bill is likely to make it easier for other privately owned transmission and distribution entities to operate.

Figure 2: *Summary of MEGA impacts*

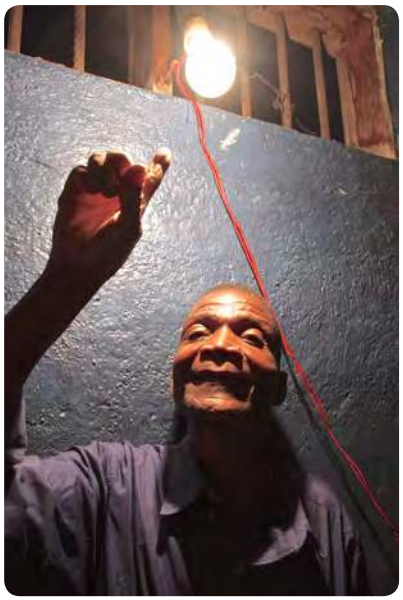
MEGA – Mulanje Electricity Generation Agency

Country: Malawi

Sector: Energy

Product: Provision of energy services to low-income residents of rural Malawi

BoP: Consumers of electricity (businesses, households) and users of local community services



Inclusive business model:

Small and growing social enterprise. Provides affordable access to electricity for BoP consumers in Mulanje Mountain area. Aims to build ten micro-hydro sites over ten years. BIF technical support developing the business plan, analysing financials, developing legal and governance structures and assisting organisational/ operations development.

Market opportunity:

- No direct competitors in the area, no national grid at present
- Substitute energy sources considerably more expensive
- Large potential consumer base of 520,000 people in the area
- Region of rich natural resource facilitates micro-hydro energy

Commercial results:

- No revenue collected at July 2013 due to delayed smart-meters
- Over $1mn invested in sites 1, 2 & 3

Development impacts:

- Two households, one hospital and several businesses connected
- New enterprises stimulated
- Greater turnover in shops due to longer productive hours
- School has nearly doubled teaching staff, attracted by electricity

Future plans:

- Forecast $37,348 gross margin from Site 1 operations in first 12 months
- Operational break-even forecast after installation of fifth turbine (Yr 6)
- Further $1mn donor/grant funding needed to complete Sites 2-5
- In next 12 months, 427 households will be connected at Lower Bondo

Note on figures used:

Currency: In cases where Malawian Kwacha has been converted into USD, this report has used the following exchange rate $1 = 265 MKW based on the latest version of MEGA's business plan available.

Base of Pyramid: Numbers of people reached at the base of the pyramid represent those directly engaged as suppliers, entrepreneurs or consumers, and are not multiplied by household size to represent 'lives touched'.

1 The inclusive business in brief

> **MEGA is a pioneer private energy company in Malawi, generating electricity from a 40 – 100 kW micro-hydro turbine and distributing to customers via mini-grids. MEGA aims to develop 10 sites over the next 10 years.**

> **MEGA is inclusive throughout its value chain: communities participate in the ownership and governance structures of the organisation; in site construction, operation and retail; and form the key target customer group.**

> **MEGA has taken an innovative approach to community-based energy generation: instead of site development followed by 'hand over' to communities, MEGA will continue to run all sites to achieve economies of scale but engages closely with communities throughout.**

1.1 What is the inclusive business?

MEGA is a social enterprise and the first operational private energy company in Malawi. MEGA's inclusive business aims to provide the rural, off-grid villages of the Mount Mulanje area with access to affordable and available electricity and energy services, locally generated through a series of 40-100 kW micro-hydro schemes.

The business seeks to capitalise on a market gap: Malawi's national grid fails to service an estimated 99 per cent of the country's rural population, including communities in this area, yet modern energy services are desperately needed. Lack of access to electricity contributes to a range of social and development challenges (see Box 1).

Social and sustainable development challenges of poor energy access

Energy access as an enabler of development has received increasing attention in recent years. The UN Secretary General, Ban Ki Moon, commissioned a special report on 'Energy for a Sustainable Future' in 2010. 2012 was labelled 'Year of Sustainable Energy For All'. Practical Action's 2010 'Poor People's Energy Outlook' clearly links energy access with each Millennium Development Goal (MDG).

In Mulanje, lack of access to electricity means a disproportionally high percentage of household income is spent on fuel, lung and eye health is poor due to burning kerosene, there are fewer opportunities to grow businesses and education and health services are typically lower quality.

Box 1

MEGA seeks to meet these social needs through the commercial opportunity of energy provision.

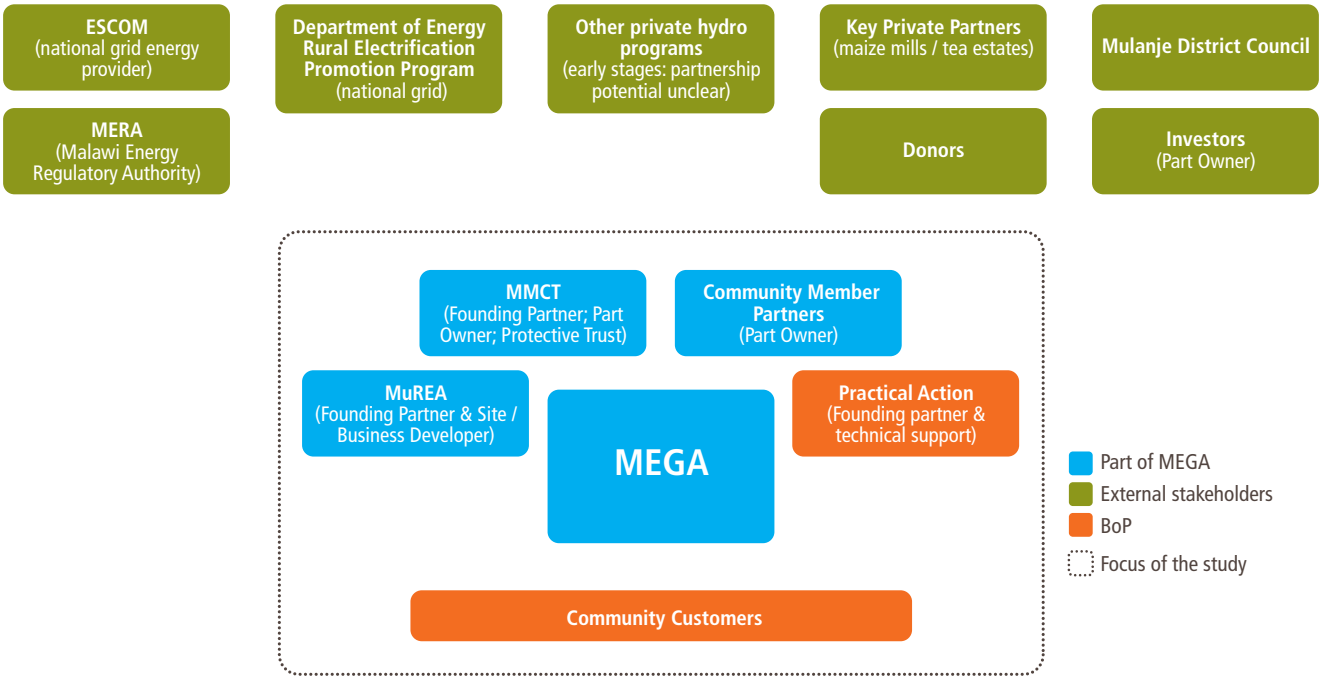
The business will leverage the high levels of annual rainfall and water runoff of Mount Mulanje – the wettest mountain in Southern Africa. MEGA's long-term view is to scale up from one to 10 micro-hydro powers stations in the area over 10 years. Distribution will be via a combination of mini-grids direct to households, businesses and community assets (schools, health centres etc.) and indirect energy services sold via business centres. This will provide communities with a more affordable, more reliable, safer alternative to paraffin, kerosene, firewood and other prevalent lighting and solutions.

***Table 1:** MEGA key facts*

MEGA Key Facts	
Name	Mulanje Electricity Generation Agency (MEGA)
Sector	Energy & Infrastructure
Country	Malawi
Product/ Service	Provision of energy services to low-income households in rural Malawi
Relationship with lead company	MEGA is being set up as an independent social enterprise. Strong links exist with the **Mount Mulanje Conservation Trust** (MMCT), whose Executive Director has been a key driver of the initiative. MMCT owns a majority share of MEGA and has the right to veto decisions not consistent with founding principles. Representatives of MMCT sit on MEGA's Board.
Key definitions & other key players	**ESCOM** – Electricity Supply Corporation of Malawi (national grid, transmission and distribution company) **MERA** – Malawi Energy Regulatory Authority **MMCT** – Mount Mulanje Conservation Trust – founding partner – place on Board of Directors – has power of veto for decisions not aligned to environmental principles **MuREA** – Mulanje Renewable Energy Agency – founding partner – place on Board of Directors – principle collaborator responsible for site and business development **PA** – Practical Action – founding partner – an international NGO with technical engineering expertise **BoP** – Base of Pyramid – the conceptual demographic group with the poorest socio-economic status in a population.

While there are numerous actors involved in this rural electrification effort, this case study focuses on the core inclusive business, MEGA, its founding partners (MMCT, MuREA and PA) and its community participation (see Figure 3).

Figure 3: *Focus of this case study*



1.2 What makes the business commercial, inclusive and innovative?

How is it commercial?

MEGA's commercial strategy aims to achieve financial operational sustainability. The organisation needs and aims to be profitable enough to run its own operations sustainably, but is not chasing a profit-maximisation strategy. Its business model focuses on making energy available and affordable to its target market – promoting price minimisation, within the parameters of building a financially sustainable business. To achieve this, MEGA's business model requires donor grant funding for development and commissioning of micro-hydro turbine sites.

MEGA has identified three target customer groups: households, businesses and community institutions (schools, health centres etc.). MEGA will sell electricity at approximately twice the current rate that ESCOM (Energy Supply Corporation Of Malawi Ltd) uses in other parts of the country[2]. This pricing policy seems high but is justified when compared to the current average household spend on meeting the same energy needs through substitute products: kerosene, charcoal and wood. These fuel sources are estimated to be 17 times more expensive for households.

MEGA needs to sell at the targeted rate to make the business plan viable. Pricing, tariffs and payment mechanisms are discussed further in Section 3.2 below. MEGA has not yet started collecting revenues but has a clear action plan to do so.

[2] At time of writing, ESCOM is rumoured to be about to increase its prices by around 30% as the subsidy is reduced. If true, this would reduce the gap between ESCOM prices and planned MEGA prices and even the playing field for energy providers. If/when the grid extends into the Mt. Mulanje area, MEGA may also benefit from Malawi Energy Regulatory Authorities feed-in tariff, which is set at $0.15/kWh.

How is it inclusive?

MEGA's business is inclusive at nearly every stage of the value chain. Low-income rural residents of Mount Mulanje participate in the ownership and governance structures of the organisation as well as in site construction, operation and retail (productive inclusive business). They also form the key target customer group (consumer inclusive business).

Potential benefits to BoP groups of available and affordable modern energy services are huge. As mentioned above, in financial terms, MEGA projects that it has the ability to offer energy at a price point 17 times lower than current off-grid sources, saving rural households approximately 16 per cent of their income. This totals approximately $500,000 saved per year, collectively, once all ten sites are operational.

Additionally, businesses have greater opportunities to succeed as ICT becomes more possible; lung and eye health should improve; access to education and basic health care will be better.

How is it innovative?

MEGA will be the first operational private energy company in Malawi. MEGA is innovative in going one step further than other organisations' attempts[3] to stimulate inclusive energy generation businesses in BoP communities: instead of installing and commissioning an energy plant and then handing over to a community group, MEGA has sought to engage communities in the design and implementation of a full ownership, governance and operational business that will endure and meet community needs without a handover phase. When asked about commitment to the success of the MEGA project, Mr Sulupi, Project Committee Chair, said:

"We fought hard and we succeeded. We will never try to take this from MuREA, but it is ours because it is in our hearts."

While this fully-integrated pro-poor model potentially increases risk regarding possible tension between multi-stakeholder groups, it is likely to reduce risk regarding financial sustainability, management quality and learning. The central operational hub should achieve economies of scale across sites and ensure learning and experience is captured across initiatives.

There is also important innovation to environmental conservation, as this model has been designed as a legal institution to enable fund-flows for upstream watershed protection through a water-based Payment for Eco-System Service (PES) scheme. Such innovation is being promoted within green economic parameters of sustainable development initiatives.

Women gathered for work along Lichenya river

[3] Projects reviewed in neighbouring Zimbabwe and Mozambique, drawing on Practical Action experience.

2 The story behind MEGA

> **MEGA seeks to seize the commercial opportunity to supply the population of the Mount Mulanje area with electricity to meet the social and economic need for power through a financially sustainable business.**

> **The concept of MEGA was first discussed in 2008, triggered by the intent of an EC funded project to build a micro-hydro site at Lower Bondo. MEGA was formally established in 2011 by founding partners MMCT, MuREA and Practical Action, who continue to drive its development. BIF became involved in 2011.**

> **The first micro-hydro turbine became partially operational in 2013 and at time of writing (July 2013) supplies households, several businesses a government health centre with electricity. Two sites in Phase 2 are undergoing feasibility assessments.**

2.1 Commercial drivers

The main commercial opportunity underlying this ambitious venture is a vast potential market of hundreds of thousands of rural households and businesses in the Mount Mulanje area that do not have access to energy through the national grid. There are no competitors supplying – or able to supply – electricity in this area and substitute energy sources are significantly more expensive.

If MEGA can successfully supply residents of the first test site, Lower Bondo, with appropriately priced energy services, then expanding the scheme to multiple sites around Mount Mulanje could lead to commercial success for MEGA. And if MEGA is commercially successful, it has the potential to lead a new model of energy service delivery in rural Malawi.

Of equal importance to MEGA are its social and environmental drivers – while profitability is important, MEGA seeks to provide sustainable energy access solutions to BoP consumers.

2.2 MEGA timeline

The concept of a community-based micro-hydro project at Lower Bondo was first discussed in 2008, when the European Commission funded a micro-hydro site at Lower Bondo, implemented through Practical Action. A new range of national partners came together around this initiative, principally involving MMCT, MuREA and Practical Action. These organisations continue to drive MEGA's development and a thorough induction for the new General Manager (starting early 2014) will need to be provided by them.

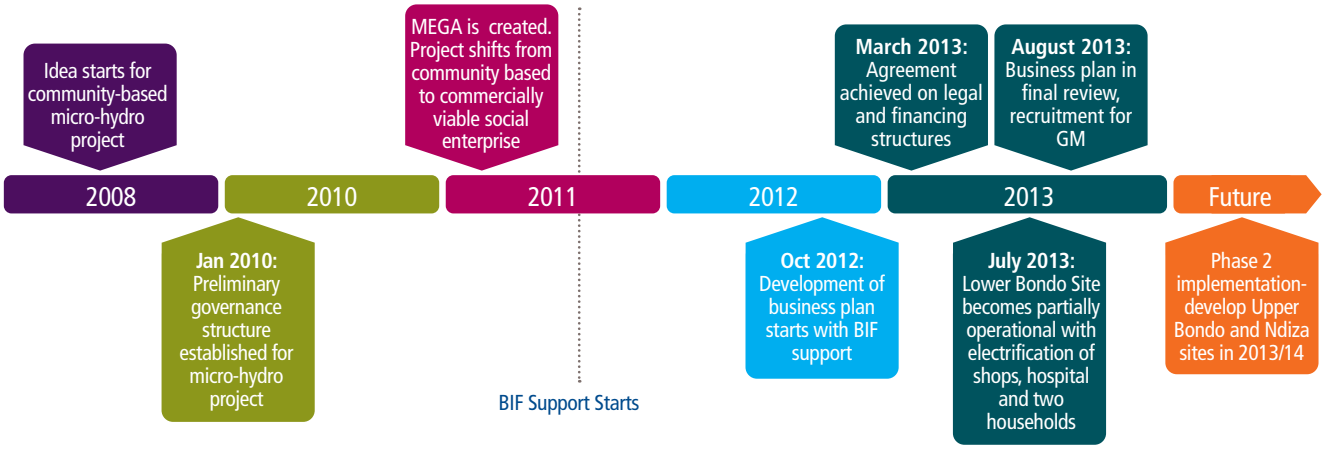
MEGA was established in 2011 and the Business Innovation Facility (BIF) became involved in the same year.

BIF has provided critical support in business plan development, organisational and operational development and the legalisation of MEGA. The BIF team also conducted a consultation with the community to understand how they wished to engage in the management and ownership of MEGA and supported recruitment efforts for the new General Manager.

A process of legal registration is on-going at time of writing (July 2013), supported by BIF.

Key milestones in MEGA's development are show in Figure 4 below.

Figure 4: *MEGA timeline*



At July 2013, the Lower Bondo site is partially operational with a number of households, several shops and a government health clinic now being connected to the mini-grid. Two additional sites are planned for survey in 2013 and 2014. Seven other sites are at various stages of development.

Lower Bondo power house in action

BIF support in brief

BIF's original mandate was to provide support in developing and establishing a viable legal structure for MEGA and to support organisational development and operationalisation. After a year of partner collaboration, BIF has supported:

- Development of a comprehensive business plan, including detailed sections on:
  - Governance and ownership structure, based on input from all stakeholders, including a community consultation
  - Financial analysis of tariffs and profitability indicators, including NPV
  - Operational plans
- Finalisation of legal status
- Recruitment of a General Manager
- Preparation of marketing and fundraising materials
- Participation on the Project Steering Committee
- Facilitating communication and positive relationship between partners and stakeholders

Box 2

2.3 Market context

MEGA's main source of competition comes from vendors of substitute energy products: paraffin and kerosene for lighting and some cooking; charcoal and wood for cooking; solar panels and battery-operated torches for lighting.

MEGA faces very little competition in terms of direct suppliers of electricity. ESCOM, which supplies the national grid, does not reach remote areas of Mount Mulanje and, as such, is better characterised as a complementary player rather than a direct competitor.

Other market participants include those in the solar, wind and turbine power space. However, solar power is prohibitively expensive for many BoP households without donor assistance and is not practical for mass power generation. While the country has started to see entrants in the hydro and wind spaces, the market is for the most part un-served.

This lack of direct competition means MEGA has every opportunity to achieve its vision and execute its business plan. If it can gain and maintain momentum, there is every possibility MEGA could influence the wider energy landscape in Malawi, paving the way for replication and further public and private energy investment.

2.4 Summary of factors influencing evolution of the business model

Table 2: Factors influencing the evolution of the business model

Influencing factor	Explanation
Internal	
Balancing social and commercial drivers	The most significant influencing factor shaping MEGA's business model and strategic development is the dual focus on socio-economic agendas as well as commercial viability. The strategy has been shaped by considerable discussions over the legal basis and governance framework for MEGA, resulting in a broad community-owned social enterprise.
Multi-stakeholder approach	Development of the business model and business plan has been slowed down by the engagement of multiple stakeholders at various levels. However, the pay-off for this should be strong and local ownership and a strategy which maps out an agreed pathway to meet a shared vision. Additionally, MEGA also needs to abide by the mandates and objectives of its founding partners, focusing heavily on the environmental sustainability of the area.
Individual champion/ leadership	The Project Steering Committee has undertaken significant general management in the absence of being able to appoint to this role. MEGA has now ring-fenced money for a General Manager's salary and an appropriate candidate has been identified and is due to start in early 2014.
External	
Macro-economic conditions	Currency devaluation, inflation and currency scarcity have caused significant delays in the execution of Phase 1 of MEGA's business plan. The foreign exchange crisis of 2012 had a massive impact on the country's economy, and rates of domestic inflation have impacted Malawian business and consumers. With an election planned in 2014, there is uncertainty around the political economic context of the next 12 months.
Regulatory context	The energy sector has recently become highly regulated and an operating license covering generation, transmission and distribution of energy did not previously exist. MEGA has had to work closely with government to agree a new licensing model.
Political context	The government collaboration efforts have been encouraging: the District Assembly has been very helpful in providing local support for the project. However, future collaboration with the District Council would need to promote more engagement and linkages between project implementers and Department of Energy staff.
Market opportunity	The lack of direct competition and the high cost of substitute products provide a high potential market opportunity for MEGA.
Natural capital	The vast water resource in the Mulanje area means micro-hydro has great potential in the area from a technical perspective. MEGA's business model has been shaped to make the most of this.
Human capital	The generally low levels of education and technical competencies in the local population present MEGA with a challenge in terms of appointing a core staff team that are both capable and committed.

3 How does the business model work?

> **MEGA's business model focuses on making energy available and affordable to BoP consumers, promoting a 'price minimisation' rather 'profit maximisation' strategy.**

> **Revenue will be generated from electricity consumption charges and connection fees. This should enable MEGA to reach operational break-even after the fifth turbine is installed and operational (i.e. in Year 6).**

> **Donor grant funding is needed to fund capital infrastructure development at all sites and to contribute to operational costs in Years 1 to 5. MEGA is in on-going discussions with schools, hospitals and local authorities regarding charging mechanisms for community assets.**

3.1 Overview of the business model and value chain

MEGA's business model focuses on making energy available and affordable to its target market – BoP consumers. MEGA promotes a 'price minimisation' rather than 'traditional' profit maximisation strategy within the parameters of building a financially sustainable business.

Revenue is generated from households, businesses and Business Centres:

(i) Payment for electricity consumed (metered)

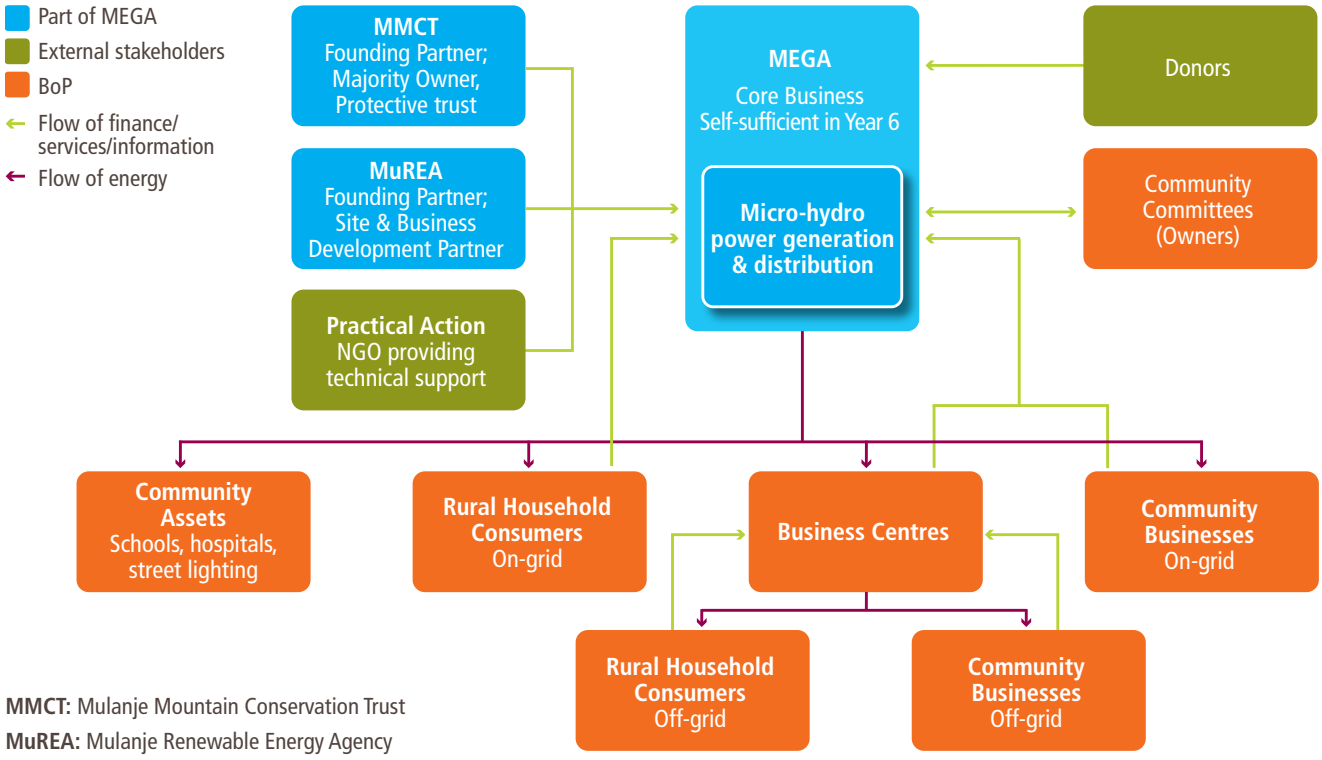
(ii) One-off connection fees

Payment for energy consumed is the more significant revenue stream with electricity sales projected to account for 86 per cent of total revenue in Year 1 increasing to 98.5 per cent in Year 10 .

The MEGA business model aims to achieve economies of scale for central operations by developing multiple sites. MEGA aims to establish a new micro hydro turbine site, with accompanying distribution system, every year for 10 years. Electricity will be generated from the natural water resource of Mount Mulanje, leveraging the favourable precipitation and water flow conditions, to BoP consumers.

Resource-rich Mulanje mountain

***Figure 5:** The MEGA business model*



MMCT: Mulanje Mountain Conservation Trust

MuREA: Mulanje Renewable Energy Agency

MEGA distribution will be to households, businesses, community assets (schools and hospitals) and Business Centres. Business Centres are envisaged to provide indirect energy services (such as charging batteries, devices and/or access to ICT) to consumers, including off-grid households and businesses.

The price of electricity will be approximately twice the current ESCOM rate. ESCOM is not operational in the area and this price, while more costly than national grid rates, is estimated to be 17 times cheaper than the cost of substitute energy sources currently being used. This price point is needed to generate enough revenue to create a financially viable operation.

Community entrepreneurs will be trained and employed by MEGA as vendors of energy credit to households. Businesses and Business Centres can negotiate an appropriate payment plan directly with MEGA. Business centres will retail energy services to off-grid consumers and businesses. Discussions with local authorities are likely to result in power for hospitals and health centres being paid for by local government. Electrification of schools – wiring and consumption costs – will need to be covered by donor grants and/or parental contributions as neither MEGA nor the Department of Education is able to cover these costs.

The business plan forecasts that revenue from sales will cover all running costs, including staffing, operations, maintenance, VAT, site insurance and a one per cent annual contribution to a community fund, from the point at which the fifth turbine site has been operational for 12 months. Grant funding from donors is needed to cover the cost of all infrastructure investment and depreciation costs, plus a contribution to operations in Years 1 to 5.

MEGA's commercial value chain is relatively simple: it generates electricity from the abundant natural resources of Mount Mulanje, distributes this electricity to BoP consumers and charges per unit of consumption (see Figure 6 below).

MEGA's focus on sustainable development means its social value chain is more complex. Despite its imminent status as a separate legal entity, MEGA's business model and value chain remains closely intertwined with MMCT and MuREA.

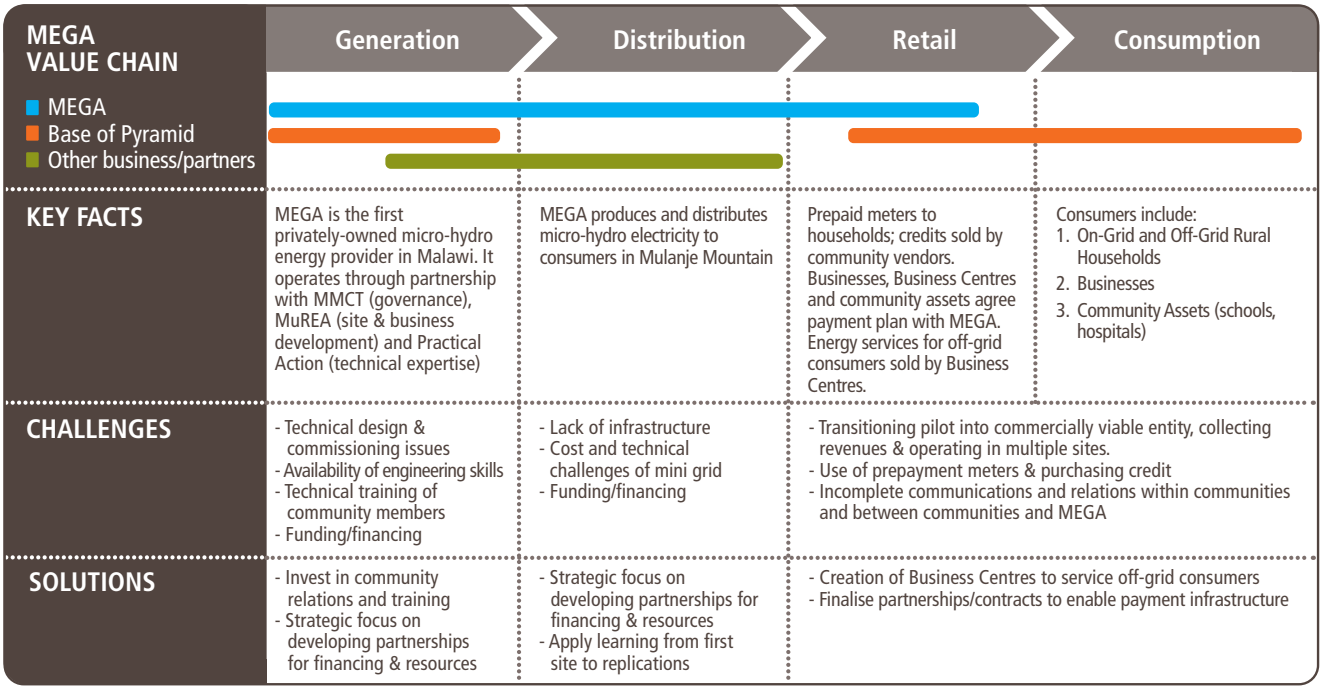
Central to MEGA's success will be achieving and maintaining strong collaboration between a range of partners and stakeholders, including the end-to-end nature of its inclusivity of BoP consumers

The MEGA business model was chosen for two key reasons: firstly, the economies of scale needed to realise commercial sustainability can be difficult to achieve with community-by-community ownership. MEGA hopes that a central over-arching management function will assist its commercial viability. Secondly, despite achieving key milestones, there remain some question marks around the capacity of community-based organisations to run similar entities in sister projects in neighbouring countries. MEGA is keen to explore a different business model.

The centralisation of core business functions in a cross-community 'hub' makes MEGA's model different from other community-based models used in distributed energy schemes in neighbouring countries[5]. In other schemes, infrastructure and/or entire enterprises have typically been initiated by a third party and then handed over to a community group or local entrepreneur after construction (see Box 3).

[5] E.g. A project in Mozambique, where a private entrepreneur was involved in the project; a project in Zimbabwe, where the project was community based and operations were handed over to the community.

Figure 6: *The MEGA value chain*



Practical Action – Ownership/ Management Programmes

"Promotion of micro-hydro power in developing countries has concentrated on the social, as well as the technical and economic aspects of this energy source. Technology transfer and capacity building programmes have enabled local design and manufacture to be adopted. Local management, ownership and community participation has meant that many schemes are under the control of local people who own, run and maintain them. Operation and maintenance is usually carried out by trained local craftspeople."[6]

Box 3

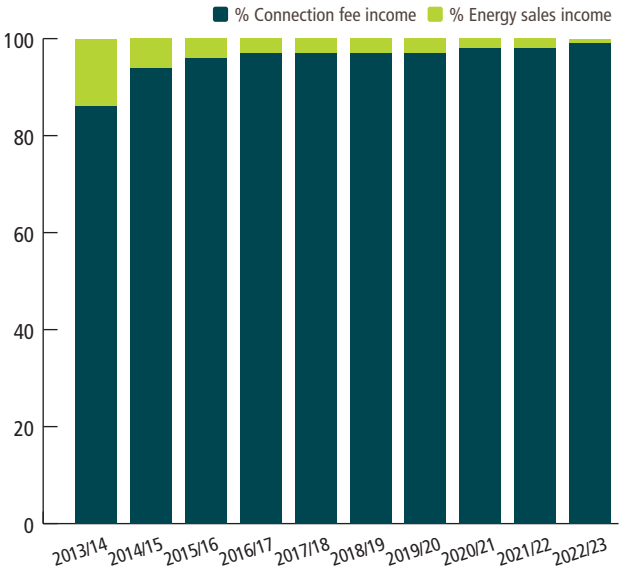
Relations with development partners, social investors, private business and out-of-country government support have been important throughout the whole process and will continue to be going forward[7], MEGA's service falls within the regulated energy sector, meaning that the licensing government and energy authorities play a key role in establishing operating frameworks.

3.2 Pricing, tariffs and payment mechanisms

MEGA has identified three consumer groups: households, businesses and community assets (e.g. hospitals and schools). In keeping with MEGA's founding principles of affordability and availability of electricity to BoP consumers, MEGA will apply a price minimisation policy as far as possible within the parameters of building a sustainable business. MEGA's concept for supplying off-grid energy solutions through Business Centres has yet to be fully developed and, as such, tariffs for these options have yet to be set (see Section 3.4).

As mentioned, revenue will be generated from two sources: (i) payment for electricity consumed (households, businesses and business centres) and (ii) one-off connection fees for households and businesses wishing to be on-grid. The first of these is the more significant revenue stream (see figure 7).

Figures 7: *Forecast revenue split between energy sales and connection fees (by %)*



MEGA has identified a tariff level approximately twice that of the current ESCOM rate (see Figure 8). While this appears high, it is justified by:

- Comparison to the average household spend on the same energy need being met with kerosene, charcoal and wood. This is estimated to be 17 times more expensive.
- MEGA's need to sell at a rate which enables a viable business plan.
- The fact that ESCOM is not considered a competitor in this market as the national grid does not reach these communities.

It is forecasted that each connected household is likely to save 16 per cent of its current expenditure by switching to MEGA energy. Over the lifetime of all 10 schemes, estimated at 25 years, MEGA predicts it will save BoP households in the Mulanje area a collective $12.5mn.

Table 3: *Forecast MEGA tariffs compared to ESCOM*

	MEGA	ESCOM[8]
Connection fee – households	$8.00	$9.32
Connection fee – businesses	$10.58	$12.33
Energy use – households	$0.094 (per kWh)	$0.048 (per kWh)
Energy use – businesses	$0.167 (per kWh)	$0.083 (per kWh)

[6] Practical Action: Technology challenging poverty, Micro-Hydro Power at 6.

[7] Practical Action has provided critical support to MEGA at critical points. A full-time engineer has been based on-site in Mulanje since May 2013 to assist MuREA in completing and commissioning the micro-hydro turbine. Practical Action also engaged an energy sector expert to support business plan development, legal incorporate and recruitment of the General Manager

[8] See footnote 2.

MEGA plans to enable revenue collection for households through pre-payment meters but the payments mechanism has yet to be fully designed and implemented.

3.3 Business model evolution

A number of factors have influenced the evolution of MEGA's business model (see section 3.4). The core challenge remains finding a balance of commercial and development objectives where appropriate tariffs can be charged whilst sufficient margins and cash flow are generated to fund operations and encourage reinvestment for expansion.

MEGA has a clear business plan which lays out the ownership and governance structure for MEGA. The commercial case is analysed in the business plan appendices. However, the operational model is still evolving at time of writing, in particular with respect to:

- **Business Centres**
  MEGA envisages some households and businesses may not be able to connect to the mini grid for either technical or financial reasons and is keen to provide access to indirect energy services to these populations via Business Centres. Business Centres would act as energy 'hubs' and would offer a range of services include mobile/other appliances charging, battery charging, computer & internet use and basic business services.

  Exactly how these will be established and who will own and run them is still in development.

- **Revenue collection**
  The vision for collecting revenues from households is to use community-based vendors of energy credit, metered and monitored by smart-meters. The imported smart-meters had not yet arrived at the time or our visit and revenue was not yet being collected. However, MEGA have a clear vision for how this will work.

  Collecting revenues from businesses, Business Centres and community assets is envisaged to be more flexible. Some may choose to operate via smart-meter while others may want to agree a payment plan which correlates with their own business cash flow. How this will be agreed and negotiated and how/where payments will be made is still to be determined.

3.4 Success factors and business risks

There is opportunity for MEGA to establish itself as a model of commercially viable distributed rural energy solutions – if the model succeeds. This is largely dependent on the commitment of the diverse partnership of stakeholders to work cooperatively together. Successfully establishing the first site at Lower Bondo is critical to the realisation of the business plan: communities need to be convinced that electricity access is possible and MEGA needs to demonstrate that tariffs can be collected and are sufficient to cover operational costs. If this first site is successful, it is likely that other donor funding will be leveraged.

Table 4 outlines the critical success factors for MEGA going forward. Table 5 outlines the risks which need to be mitigated and managed to achieve these.

Table 4: *Key success factors for MEGA*

Success factor	How it is addressed
Affordability of energy to the target market of BoP households and businesses	• A tariff minimisation policy exists to keep tariffs as low as possible within a commercially viable business • Both direct services (mini grid connection) and indirect services (via Business Centre) will be offered to the target market so that consumers can access energy packages according their income level
Accessibility of electricity and of payment credits to the target markets	• Community-based energy credit vendors will be established in communities so that connected households can purchase electricity as they need it • MEGA is still working on the retail model for businesses/Business Centres but is cognisant of this factor
Availability/ Reliability of energy in distribution system	• MEGA shares responsibility for well-maintained operations with the local community. Further training and engagement to ensure a consistent and reliable energy supply are planned
Customer awareness and engagement of product/service offering and understanding of the economic and social benefits	• MEGA has a clear and full community engagement plan which will be implemented as soon as smart-meters arrive and are available for installation • Early adopters will help to demonstrate financial and health benefits of using MEGA energy
Safety of generation, distribution and use	• Ensuring safety and sustainability of equipment will be addressed through training operators on proper use and maintenance

Table 5: Key risk and mitigation strategies

Risk	Mitigation and management
Internal	
Financial viability Of MEGA's long-term business plan	The dual focus on socio-economic benefit and commercial viability presents challenges in making MEGA commercially viable. MEGA has a clear understanding of the sales volumes needed to achieve to do this and will develop a sales incentives plan for vendors in line with this. Grant funding for further sites is also a priority. MEGA is working closely with MuREA and Practical Action to access further grant funding.
Donor funding Critical for completion of the Lower Bondo site (currently no funds are available to wire school buildings) and for replication to further sites. Success in Lower Bondo is essential as demonstration of the project.	The Board of Directors is prioritising this and working with and through its network to identify further funding (e.g. the Global Energy Fund is developing a proposal which plans to invest in MEGA, subject to further analysis).
Leadership and champions Essential to drive MEGA forward but, to date, it has been difficult to identify suitable candidates.	Board members have invested efforts in recruiting an appropriate General Manager and have been rewarded by identifying a strong candidate, due to start in position in early 2014.
External	
Macro-economic conditions (e.g. currency devaluation/inflation etc.)	MEGA has built contingency into budgets and timelines to accommodate variability in the external environment.
Community adoption Critical for MEGA's success as the target market is community households and businesses. Community members have commented that five years is a long time to 'wait'. Additionally, changing behaviours typically takes longer to achieve than projects predict.	The MEGA Board plans to invest in greater community awareness and collaboration with village leaders.
Human capital MEGA needs to work with and employ skilled business people, engineers, trainers and operators. This is largely lacking in the local area.	At the local level, Practical Action and MuREA will train site operatives from the local community. For head office managers, MEGA is likely to need to target recruitment from other areas and, ideally, the energy sector.

4 Commercial results

> **At July 2013, no revenues had yet been collected and MEGA is awaiting delivery of imported smart-meters to enable commencement of this.**

> **$1mn has already been spent across the first three sites. A further $1mn is needed to finalise the first site and fully develop and commission the second and third sites.**

> **Gross margins generated by site operations are forecast to rise from $37,348 in Year 1 to $194,447 in Year 10. If forecast income and expenditure are accurate, MEGA will achieve operational break-even in after the fifth turbine is commissioned – predicted to be Year 6.**

No revenues have yet been collected by MEGA at time of writing.

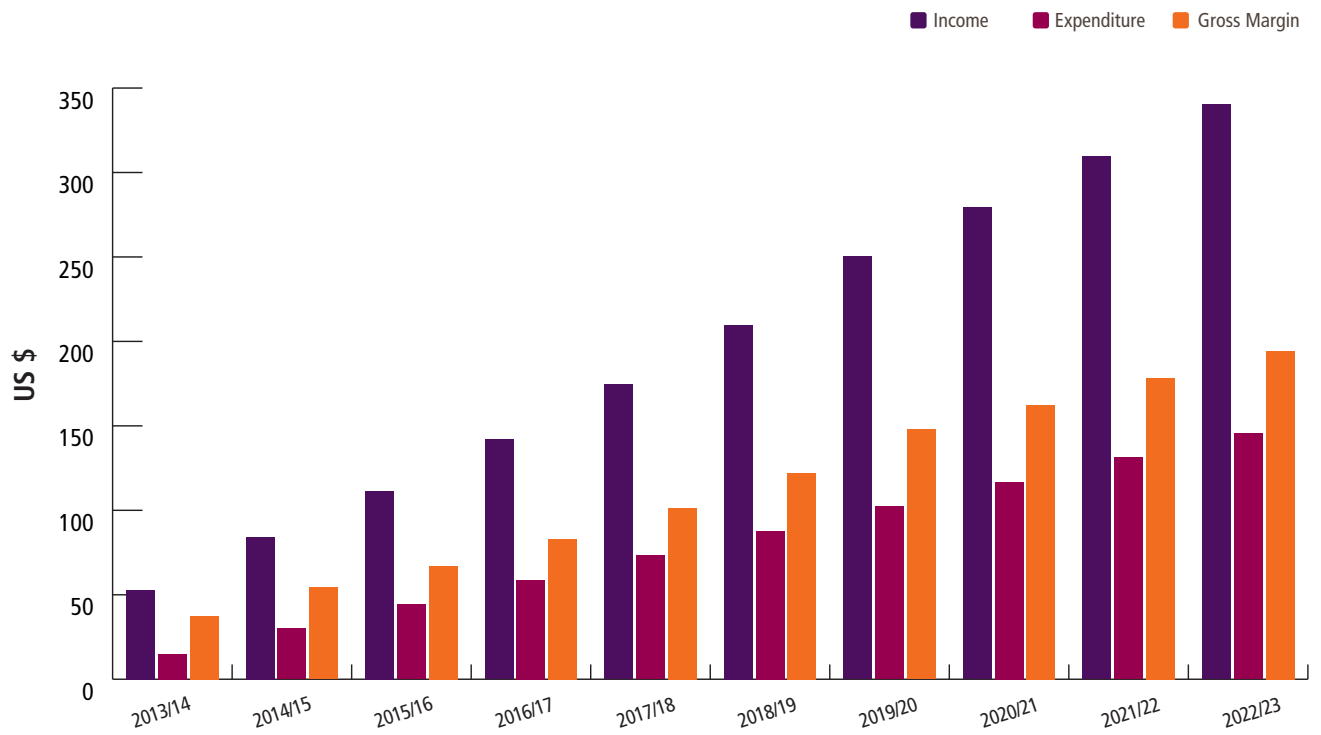
MEGA is still in the early stages of establishment and its first site in Lower Bondo is in testing phase. Electricity is currently being provided, albeit intermittently, free of charge. A system of pre-payment is planned once smart-meters arrive, however there are currently delays in their import and delivery. A comprehensive plan to execute operations is in place and revenue is forecast to be generated before the end of 2013 (see Figure 8).

If MEGA achieves these margins, and if financial expenditure predictions are accurate, it will successfully reach its aim of operational sustainability after five micro-turbine sites are commissioned, in Year 6 of the plan (shown as 2018/19 on Figure 8).

MEGA's own detailed financial analysis show significant donor funding is needed to enable MEGA's business model to succeed in providing sustainable affordable available energy to BoP consumers. Grant funding totalling over $2mn will be needed in the first five years to fund capital build costs and start-up operational costs in five sites. Years 6 to 10 will need a further $1.4mn to fund capital build costs, with operational start-up costs being funded in this phase by revenue taken from other sites. $1mn is already spent and committed across the first three sites.

As a social enterprise, tangible and intangible social, health-related and environmental benefits also need to be valued. Household cost saving is already being factored in. Development of a comprehensive social valuation tool is underway. Once valued, these benefits should assist in attracting ethical and, perhaps, impact investment in the future.

Figure 8: *Forecast gross margins for site set up and operations (does not include head office)*



At the moment, planned commercial results are as follows:

Table 6: Forecast commercial results

SUMMARY CONSOLIDATED FINANCIAL STATEMENTS FORECAST											
	2012/13 US$	2013/14 US$	2014/15 US$	2015/16 US$	2016/17 US$	2017/18 US$	2018/19 US$	2019/20 US$	2020/21 US$	2021/22 US$	2022/23 US$
Net margin	-	28,432	37,981	46,968	58,214	70,891	(10,607)	3,659	13,853	25,084	32,527
Net assets	406,000	712,625	979,435	1,244,958	1,511,453	1,806,355	2,026,569	2,204,882	2,383,116	2,562,307	2,481,821
Cash position	-	28,432	66,413	113,381	171,595	242,485	231,878	235,537	249,391	274,474	307,002

SOCIAL IMPACT SUMMARY										
	2013/14 US$	2014/15 US$	2015/16 US$	2016/17 US$	2017/18 US$	2018/19 US$	2019/20 US$	2020/21 US$	2021/22 US$	2022/23 US$
Total Savings made at HH Level MEGA estimate 16% of household spend will be saved	65,969	114,546	155,326	199,106	245,884	296,560	354,282	398,511	442,740	486,969
Community Fund 1% of sales	527	842	1,114	1,419	1,744	2,097	2,502	2,792	3,096	3,401

Uncertainty around four key factors means confidence level in the business model projections is difficult to ascertain at this stage. These key factors are:

- Donor funding for replication and subsidising operational costs
- Utilisation rates by consumers and tariff sensitivity
- Consumer demand
- Technical viability of site size[9]

The new General Manager is expected to take learning and experience from Lower Bondo forward and revisit the business plan at regular intervals.

Table 7: MEGA commercial results to date

	Financial	Strategic
Company objective	• Achieve a net profit of $40,617 in first year of operations (site and central gross profit) • Reach operational break-even by end of 5th site and start of Year 6 • Secure over $1mn donor funding to implement four further sites by Year 5	• To provide affordable available sustainable energy to BoP consumers • To demonstrate commercial viability of small-scale distributed renewable energy solutions in BoP contexts
Progress to date	• No revenue streams yet secured. • Currently in Year 1 with approximately $1.3mn secured from donors • Need to secure funding to wire the school buildings	• No direct competition present, only substitute energy sources • MuREA appointed site and business development lead
Trajectory going forward	• A further $1mn is needed to complete sites 2-5. $1mn is already committed across sites 1-3 • Expansion capital needed from donors as grants • Loans have prohibitively high interest rates (circa. 35%)	• Networking and evidencing success will be critical to achieving donor income. • New General Manager to lead the team
Key challenges	• Implementing tariff charging mechanisms ASAP • Achieving sales volumes in Year 1 • Securing further donor funding	• Need to clarify role and buy-in of key potential clients such as local tea estates • Ongoing partnership building for donor funding

[9] A site must be 40kWp to be financially viable but full technical feasibility, including environmental assessments, have not yet been completed for all sites.

5 Development impacts

> **In July 2013, MEGA provides electricity to households, several businesses and a government health clinic. Shops have reported increased turnover due to longer opening hours enabled by lighting. Electricity has ignited an entrepreneurial spark and new ventures – a local cinema and a maize mill – are underway. The first baby to be born by electrical lighting has arrived and the school has nearly doubled its number of teachers.**

> **MEGA plans to connect 427 households in the first 12 months of operation. Within the first three years of operation, 3,000 households should be directly connected and 27,000 people accessing indirect benefits.**

5.1 Direct impacts at the base of the pyramid

After only a few weeks of electrification, MEGA's impacts on community members are already apparent. Shops have received power and the local trading centre is bustling with activity long after dark falls at 5pm. The health centre has received power and welcomed the first child of the community to be delivered by electricity rather than by candlelight.

"There is real impact now. We feel it. You can see it."

Mr. Sulupi, Bondo Steering Committee Chair

MEGA has an ambitious vision to replicate to 10 sites in the Mount Mulanje area. This has the potential to reach more than 42,000 beneficiaries directly and up to 520,000 indirectly (see Table 8).

Children celebrating a lit bulb in the village

Table 8: *Target beneficiaries of MEGA Sustainable Development Impact*

	Now	Planned
Number of direct beneficiaries – i.e. those receiving direct transmission	**Lower Bondo:** - 2 households - Several shop keepers and entrepreneurs	**Lower Bondo:** - 427 Households (approximately 1,880 inhabitants) - 10+ shop keepers and entrepreneurs **Upper Bondo + Third Site:** - 3,000 households (approximately 13,200 inhabitants) - 30+ shop keepers and entrepreneurs **Across all sites (collectively):** - 9,600 households (approx. 42,240 inhabitants)
Number of indirect beneficiaries – i.e.those receiving benefit via enhanced services	**Lower Bondo:** - 3,000 people from improved health services from electrified health centre and access to shops	**Lower Bondo, Upper Bondo and Third site:** - 27,000 individuals **Across all sites:** - Up to 520,000 through accessing improved community assets and/or indirect energy services
Characteristics of BoP populations	Earning less than $1.25 per day on average Rural, un-electrified households Significant income from agricultural activities	
Gender inclusivity	50% women in households benefitting	

The impact of affordable and available access to electricity in BoP communities has been a specific area of focus for UNDP and sector actors, particularly since 2010 (see Box 4). It is widely agreed that access to modern energy series has the potential to create vast direct and indirect benefits across a range of socio-economic areas.

Potential direct and indirect impacts of electricity access in BoP communities[10]

Increased economic activity / income

- ☐ Greater possibilities for commerce (barbers shops, mobile phone charging etc…)
- ☐ Greater possibilities for value-add to agricultural products (milling etc.)
- ☐ Lower transaction costs for business due to increased information from ICT
- ☐ Local employment opportunities with MEGA
- ☐ Lower energy costs for households and businesses
- ☐ More productive hours each day due to lighting
- ☐ More productive hours each day due to reduction of time spent by women and children collecting / buying alternative energy sources

Education

- ☐ Longer hours for study at home & at school due to lighting
- ☐ Longer hours for study at home as less time spent collecting / buying alternative energy sources
- ☐ Attraction and retention of teachers
- ☐ Possibility for improved sanitation facilities, likely to encourage female students

Health & Wellbeing

- ☐ Safer birthing conditions due to improved lighting & more medical professionals reduce maternal and infant mortality
- ☐ Improved facilities for storing temperature-sensitive vaccines and HIV tests improve diagnoses and vaccination
- ☐ Reduced exposure to toxic kerosene fumes

Gender Equality

- ☐ Reduced burden on women to collect/buy alternative fuel sources
- ☐ Improved female health due to reduced exposure to kerosene fumes

Environmental stability

- ☐ Reduced deforestation for wood and charcoal
- ☐ Reduced emissions from burning alternative fuel sources
- ☐ Greater awareness of the importance of natural resource in the wider population

Box 4

To date, only two houses, a few businesses and the health centre have access to electricity in Lower Bondo but already the impacts of electrification in this area are being seen and felt – as demonstrated on the mini case studies below. Eight community members have been employed at the Lower Bondo site as operators, watchmen, electricians and computer operators.

Community case study 1: Stimulating entrepreneurs through energy access

The entrepreneurial spirit stimulated by access to electricity is already evident in Lower Bondo, just one month after the first electric bulb was lit.

One of the first two homes to be electrified belonged to Lickson Tchakaan, an entrepreneurially inspired man, who set up a movie theatre to provide entertainment for children and families of the villages. The community's enthusiasm is evident – and music and dancing play a very important part of the culture. Lickson is also pleased as he now generates an alternative source of income through entrance fees.

The local grocer is another entrepreneur who is excited about Bondo's electrification. Now that refrigeration will be possible, the grocer plans to expand her product line to include Coca-Cola and other items that are not possible to store without a cooling system – or that simply taste and sell better when chilled!

It is clear that the entrepreneurial spirit is already developing in Bondo, and it expected that this will only continue to grow as time passes.

Box 5

[10] Summary from sector-specific literature, Practical Action's Poor Peoples' Energy Outlook 2010 a key source.

Community case study 2: Improving education with electricity

"In Malawi we write Government exams. I live in the town. I have electricity, can buy books, read in the light and go to school with good teachers. I go and sit the same exams as someone who lives in a village and has no electricity or good teachers. It is unfair competition. They are doomed from the start."

Resident of Mulanje

Before news of MEGA's electrification plans, the school at Lower Bondo had seven teachers. Once news spread of the planned electrification, more teachers were willing to work at the school. The number present at time of writing is 13, although the school faces teacher attrition if funds cannot be found to wire the school buildings.

Box 6

Community case study 3: Higher productivity of the village maize mill

Ms. Sabina Kalitera is the owner of what will be the first electrified maize mill to service Bondo and three surrounding villages. Opening this maize mill is a dream come true for Sabina, who grew up in a rural village on Mount Mulanje and spent most of her childhood working and playing in a community with no electricity. Sabina remembers the time when women of her family walked long distances – up to 10km each way – to reach the closest maize mill. "Maize is a staple in our diet, so visiting a mill to process grains is a very important part of the day-to-day work activities for the women and girls in this culture."

Children and particularly girls are often kept at home to fulfil these duties – and sometimes not enrolled in school at all. Electricity will make a huge difference to the choices available to children.

Sabina now lives in a city approximately 100km away, and over the past year has been travelling back and forth to oversee the development of the maize mill. Getting to this point has not been easy: nearly 20 years ago, she was the first woman in the area to pass the exams required to attend secondary school. She now works as a midwife but is keen to see her home region prosper.

In the summer of 2013, the maize mill is nearly complete. Machinery is in place and the building has been wired for electricity. The only thing missing is power, and Sabina is thrilled to see that electricity has started to be generated from the Bondo site.

Sabina is very excited about the opportunity this presents. Not only is she about to open her own business that will generate additional income for her family, but this business also has the power to transform the lives of many women and girls on Mount Mulanje. "It is an honour to be part of such a special moment in this area's history."

"People are literally 'watching' the light bulbs, and are eager for the accessibility to spread. It will open up this whole area. It will change the lives of these people."

Mr. Ben Friday, Medical Assistant & Manager of Community Hospital

Box 7

5.2 Potential for systemic impact

While MEGA's ambition is 10 sites in the Mount Mulanje region, it is hoped that, if successful, MEGA could inspire and spark similar social enterprises to replicate across the country. With Malawi's population over 15 million and access to energy less than 10 per cent, there is certainly the market potential[11].

In order to achieve this level of systemic impact, MEGA will need to address the many challenges that have been outlined in this report. The new General Manager must take on the challenges of developing positive collaboration with the government and regulatory authorities and other stakeholders – and it will be necessary to obtain support for positive regulation and possibly subsidies.

During our visit, it became clear that individuals within the regulatory and energy sector see great potential for MEGA's energy sector. With a national grid that is simply too expensive to extend to rural regions due to geographic, resource and economic constraints, MEGA's model, if successful, is seen to be a positive and impactful solution to the challenge of electrification which can and effectively complement the existing national grid system.

"If electricity is provided it must be sustainable. We can rejoice today – but if it does not turn on tomorrow, we are back to square one."

Mr. Ben Friday, Medical Assistant & Manager of Community Hospital

[11] Although environmental potential for renewable energy sources is yet to be mapped across the country.

6 Future outlook and lessons learned

6.1 Future outlook and potential for scale

As highlighted throughout this report, the critical challenge facing MEGA is its ability to reach scale and commercial sustainability within the framework of its founding principles . Success factors needed to achieve these are outlined in Table 4, Section 3.4, the most critical of which is likely to be the securing of further donor funding to bring the first site to completion and implement sites two and three. If this hurdle can be overcome, MEGA is likely to stand a good chance overcoming the other challenges it faces in realising its financial projections.

One of the most significant impacts of MEGA thus far is the role of this organisation as Malawi's first operational private energy operator as a 'test case' in terms of operating within Malawi's current regulatory framework.

At time of writing, the current regulatory regime allows for issuance of one licence to an Independent Power Producer (IPP) and it is expected that the IPP will then sell energy to ESCOM for transmission and distribution. However, MEGAs business model includes transmission and distribution as well as power generation and needs a license in line with this. It seems that Malawian Government authorities have bought into the concept of MEGA concept as a financially sustainable micro generation model. It seems likely that this will influence the detail of the new Energy Policy so that businesses based on a similar premise to MEGA can be replicated.

The new General Manager is due to start in early 2014 and is anticipated to bring not only skills and knowledge but a refreshed wave of drive to the venture. Key areas that will need to be addressed include:

- Delivery and installation of pre-payment meters and realisation of revenue streams
- Demonstrating demand and affordability for consumers
- Developing and realising value from key relationships with the private sector
- Ensuring learning from the experience of the site at Lower Bondo is rolled forward into subsequent sites
- Demonstration of the value of financial, environmental and social returns and using them to leverage ethical funding
- Developing and realising value from government relationships.

The MEGA team and community members have overcome many challenges over the past five years to get this far. Through these, the multi-stakeholder group has learned a great deal about the project's strengths, limitations, uncertainties and about their strengths and roles. This will make the team all the stronger in the future.

Looking to the future, successful mini-grids on Mount Mulanje could serve as a model for similar rural energy solutions for low-income consumers elsewhere. With new jobs, increased prosperity and a better quality of life and education, there will be more and better opportunities for BoP populations. The project is an ambitious one, but with the spirit of the MEGA team, the tangible benefits already emerging, it could work.

A region and a sector stand to be transformed if MEGA can make this happen.

6.2 Additionality of BIF support

While MEGA has built on the engagement, enthusiasm and skills of a number of organisations (MMCT, MuREA, Practical Action), the availability of technical assistance through the BIF programme has provided critical non-partisan input to the MEGA project team.

Input provided by BIF has enabled both the development of a business plan built on a thorough financial analysis and also a process by which key stakeholders have been facilitated to come together and build a shared vision of what MEGA will achieve. The Business Plan developed with BIF clearly enables further donors to understand the venture and provide additional capital.

"The project could not have happened without BIF. Without the business plan, the idea was just that – an idea. BIF played a critical role in the process of delivering a business plan, establishing a Board and determining the organisation's structure."

Carl Bruessow, MMCT

6.3 Lessons learned

There have been many lessons learned since MEGA's inception in 2008 – and many still to come. Lessons learned include:

Technical delivery of product and service

- **Human capacity, staff turnover and community buy-in**
  Despite enthusiasm for the project now that electricity is being produced and lights are on, there was initially a level of scepticism. Practical Action and MuREA, who were overseeing technical works, struggled to fully engage community workers. Lack of attention to detail and high staff turn-over led to both delays during construction phase and the need to re-work certain elements (for example, the power house had to be closed for several days due to human error; the land for the pipeline took longer to construct than was anticipated). Future sites are likely to benefit from being able to show community works the outcome of the operational site at Lower Bondo.

- **Procurement delays**
  Critical equipment and parts had to be imported due to lack of local availability. This caused significant delays in procurement which, in turn, slowed the construction and commissioning of the site. Future sites need to place purchase orders early and ensure that procurement roles are suitably supported to deliver critical equipment to site on time.

- **Clarity of costs and funds available before creating expectation of connections**
  One of the challenges facing MEGA and the community is lack of funds to wire the school buildings. MEGA has the will and the school has the desire but building wiring costs cannot be covered by MEGA – and the Department of Education is also unable to pay. This has created frustration and confusion on all sides. Funding and means for connection – whether to a community asset, household or business, needs to be obtained before promises of connection can be made.

Building an organisation, building a team: lessons in communication and people skills

- **Agree a shared vision to drive shared action**
  One of the key 'soft' contributions that BIF technical assistance has been able to make was facilitating and supporting coordination of the different stakeholder groups. A key learning has been to make sure there is adequate time and investment in the leadership team – which will become the Board of Directors in the new structure.

- **Focus on critical areas**
  The establishment of the Project Steering Committee[13] (PSC) by Practical Action in April 2013 created optimism and momentum for the project. The PSC focuses on activities related to building and commissioning the hydro-power turbines themselves. Monthly meetings fill some of the communication and momentum gaps that have slowed the development of MEGA in the past. Bringing together key people with a specific tangible focus has been critical to delivering the Lower Bondo site and is anticipated to play a key role in transferring learning to future sites.

> **"Before we had the Steering Committee we were just working on the same project. Now somehow it feels as though we have a team and we're working together in collaboration to the same goal."**
>
> **Karen Smith,** BIF Country Manager

- **Invest in consistent community engagement and awareness**
  The aim of MEGA has always been to focus on bringing multiple benefits to the communities of Mount Mulanje – but engagement and communication with the communities has not always been ideal. There has been miscommunication and confusion around the timeline for execution, which has caused frustration, and the community has not always been fully informed of what is happening, causing delays to momentum and execution. One of the areas MEGA is focusing on strengthening is working with village leaders and other community structures to strengthen this.

Insights from the field

During the research team's visit, an interview with one community member working at Bondo health clinic shed light on what the key factors for the venture's success would be: communication, sustainability and reliability. During this conversation, we discussed the importance of broadening awareness and understanding of the project in order to explain delays to potential consumers, to manage expectations of village members and therefore to increase future likelihood of success. One issue facing MEGA is that many people in the community do not believe the power will work. Re-energising the community will ensure that people are driven to contribute their invaluable support and effort through the scheme's expansion process.

Box 8

[13] PSC comprised of: team members from Practical Action, MMCT, MuREA, Mobilise, BIF, PolyWASHTED and a representative from the Project Technical Advisory Committee (composed of representatives from the government and regulatory authorities).

Annex 1: Case study methodology

Overview

The case studies was conducted using both primary and secondary data.

Primary data was collected during a 14 day trip to Malawi from 14-26 July 2013. During this visit, meetings were held in Blantyre, Lilongwe, Mulanje and in villages on Mulanje Mountain. Meetings were conducted in the form of semi-structured sessions with the company, government representatives and regulatory officials, as well as through informal interviews with Chiefs and community members in rural villages.

During the two week period, meetings with the company and government officials were facilitated by the in-country BIF team. Discussions were facilitated by MEGA, Practical Action, MMCT and MuREA, and language interpretation in the villages was provided by project team members and community leaders. Numerous informal interviews and discussions were held with community members, some of whom form a part of the BoP.

Secondary data included BIF baseline reports, BIF application forms, information and business model information prepared by Practical Action, and BIF consultants, and desk research about poverty levels and macroeconomic levels in the area of study. This desk research was conducted before, during and after the field visit (i.e. in June, July and August 2013).

Strengths of this case study

The strengths of the case study include hearing first-hand from a wide range of beneficiaries, interviews with a broad cross-section of individuals and a cooperative company and stakeholders, who were willing to be upfront and helpful in the deep dive analysis. The case study was well facilitated by the BIF country team.

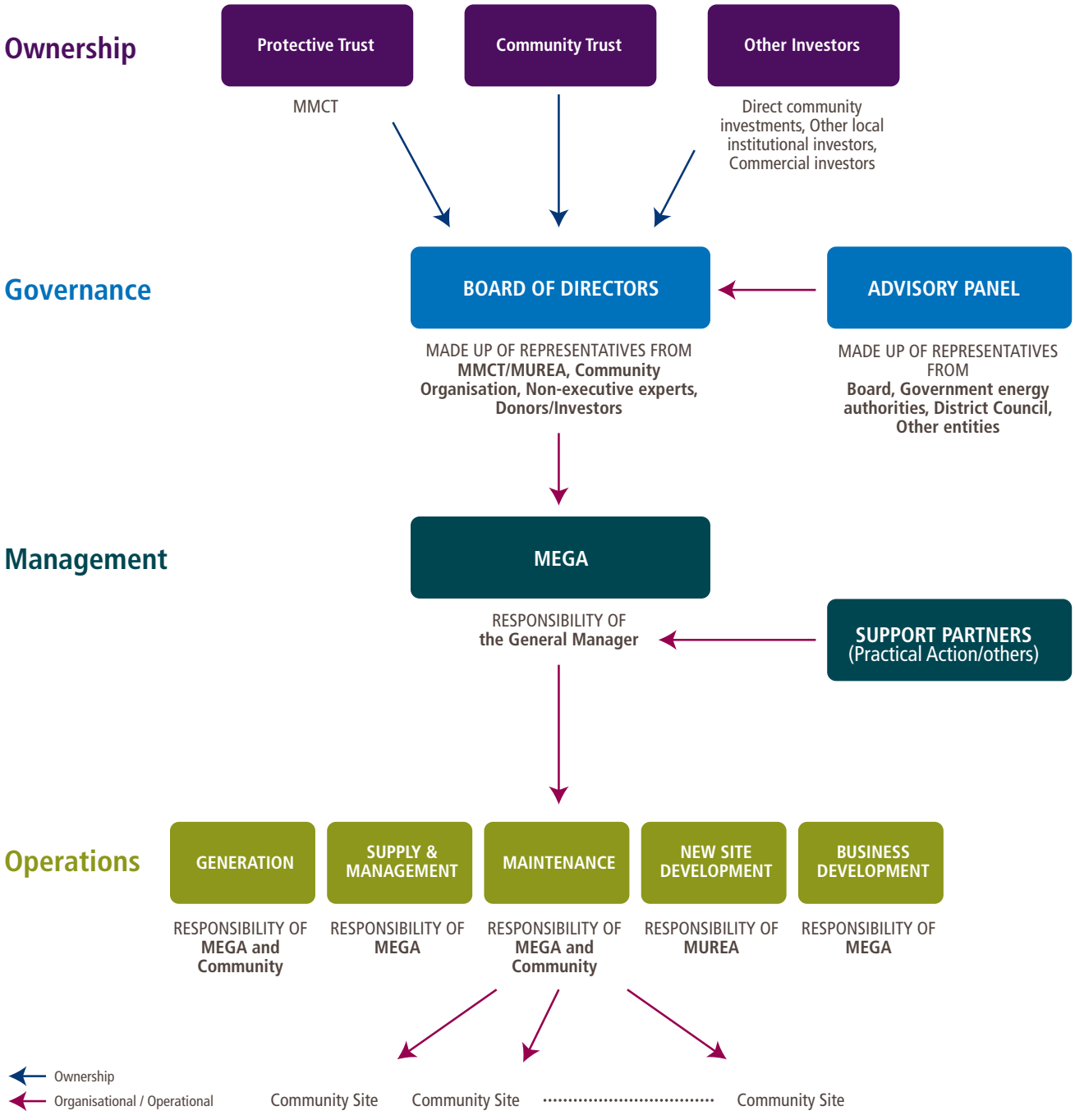
Limitations of this case study

The limitations to the case study include the inability to answer certain critical questions due to the early stage of the project, the fact that financial projections remain a work-in-progress, possible sources of bias, language barriers, and potential for lack of clear visibility into views of community members.

- Due to the limited depths and scope of data collection undertaken for this report, the nature of BoP level data is indicative
- This case study is based on information and discussion as of mid 2013. Although discussion of specific details has continued with key stakeholders in the process of finalising this report for publication in December 2013, it should be seen as a snapshot as of mid 2013.

Annex 2: MEGA's Organogram

MULANJE ELECTRICITY GENERATION AGENCY (MEGA) OWNERSHIP, ORGANISATIONAL & OPERATIONAL CHART



Partner profiles

Business Innovation Facility

The Business Innovation Facility supports companies as they develop and implement inclusive businesses. Inclusive business is profitable, core business activity that also expands opportunities for people at the base of the economic pyramid: either as producers, suppliers, employees, distributors, or as consumers of affordable goods and services.

The Business Innovation Facility is a pilot project funded by the UK Department for International Development (DFID). It is managed for DFID by PricewaterhouseCoopers LLP in alliance with the International Business Leaders Forum and Accenture Development Partnerships. It works in collaboration with Imani Development, Intellecap, Renaissance Consultants Ltd, The Convention on Business Integrity and Challenges Consulting.

Email: info@businessinnovationfacility.org

For further information and to join the discussion on inclusive business, go to:
Practitioner Hub on Inclusive Business: www.businessinnovationfacility.org

Business Innovation Facility

Institute for Development Studies (IDS)

The Institute of Development Studies (IDS) is a leading global charity for research, teaching and information on international development. Our vision is a world in which poverty does not exist, social justice prevails and economic growth is focused on improving human wellbeing. We believe that research knowledge can drive the change that must happen in order for this vision to be realised. IDS hosts six dynamic research teams, several popular postgraduate courses, and a family of world-class knowledge services. These three spheres are integrated in a unique combination – as a development knowledge hub, IDS is connected into and is a convenor of networks throughout the world.

The Impact and Learning Team (ILT) conducts action research to generate new insights into the ways that evidence is used in decision making in policy and practice, including the generation of multiple types of evidence and knowledge (from evaluation, monitoring, and research), and the behaviours and capabilities of decision makers in using evidence to contribute to organisational, programme and policy changes. The ILT is situated under the Knowledge Services department of IDS, and works collaboratively with the six research teams in the institute as well as external partners.

For more information about the Impact and Learning Team, please visit:
http://www.ids.ac.uk/team/impact-and-learning-team

For information about IDS research on business and development, please visit:
http://www.ids.ac.uk/idsresearch/business

IDS Institute of Development Studies

Oxford University, Saïd Business School

Saïd Business School is one of the world's leading and most entrepreneurial business schools. An integral part of the University of Oxford, the School embodies the academic rigour and forward thinking that has made Oxford a world leader in education. The School is dedicated to developing a new generation of business leaders and entrepreneurs and conducting research not only into the nature of business, but the connections between business and the wider world.

For further information please visit: http://www.sbs.ox.ac.uk/

Skoll Centre for Social Entrepreneurship

The Skoll Centre is a leading academic entity for the advancement of social entrepreneurship worldwide that is housed in Oxford University's Saïd Business School. The Centre fosters approaches to market-based social transformation through education, research, and collaboration among business, policy, academic and social leaders

For further information please visit: http://www.sbs.ox.ac.uk/ideas-impact/skoll

SKOLL CENTRE FOR SOCIAL ENTREPRENEURSHIP | SAID BUSINESS SCHOOL | UNIVERSITY OF OXFORD

About this series of case studies

The definition of inclusive business is fairly well known by now – profitable, core business activity that also expands opportunities for people at the base of the economical pyramid (BoP). But what does it look like in practice? That is a harder question to answer. Experience is diverse, much of it early stage, and published reports often err on the side of 'cuddly', not forensic.

This report is one of a series of 'deep dive' case studies that seeks to understand inclusive business in practice. The series explores contrasting inclusive businesses, all of which have been supported by the Business Innovation Facility (BIF). Support from BIF is not cash, but technical input to help overcome challenges, seize momentum, and build a business model that will take the inclusive business to scale and sustainability. The partnership with BIF is, thus, very focused on the practicalities of business models and identifying key milestones in an inclusive business journey.

Over the past three and a half years, BIF has worked with almost 100 companies in five countries. BIF-supported businesses offer rich lessons about the evolution and impact of inclusive business, ranging from working with smallholder mango farmers in Malawi to rural energy solutions in India. Some of this is captured in the monitoring and evaluation (M&E) system. However, the system was designed to be applicable to all projects, not necessarily to capture the richness of the most interesting.

In order to add a deeper understanding of BIF supported inclusive business, BIF, in partnership with the Institute of Development Studies (IDS) of Sussex University and Saïd Business School (SBS) of Oxford University, has generated a set of case studies of inclusive business.

Following a joint framework developed by BIF and IDS, these reports explore what counts as success and what factors have created it. They assess the internal and external context of a company's business model, the 'nuts and bolts' of how the model works, actual or likely commercial returns, emerging impacts on bottom of the pyramid beneficiaries, value added from BIF support, key success factors for scale and lessons relevant for other companies.

We hope that the reports will provide inclusive business practitioners with knowledge and insights on how companies are progressing on their inclusive business journeys – each one distinctive, yet each discovering challenges and solutions that resonate with others.

Caroline Ashley and **Carolin Schramm**, BIF, **Elise Wach**, IDS and **Pamela Hartigan**, SBS

The full series of case studies:

> ACI Agribusiness: Designing and testing an integrated contract farming model in Bangladesh
> Collaborating for smallholder finance: How is Stanbic closing the loop?
> Commercialising cassava: New opportunities for Universal Industries and Malawian smallholders
> Evolution of mKRISHI®: A technology platform for Indian farmers
> iSchool: Transformative learning in the Zambian classroom
> MEGA: A commercial approach to off-grid power in rural Malawi
> The JITA sales network: An inclusive business on the rise

To view all case studies, go to Practitioner Hub on Inclusive Business:
http://businessinnovationfacility.org/page/bif-case-studies

The series was coordinated by Carolin Schramm, and edited by Caroline Ashley. The methodology was developed and shared with authors in collaboration with Noshua Watson and Elise Wach of the Institute of Development Studies. Editing was done by members of the BIF team and by John Paul, independent inclusive business consultant. The series Production Manager was Clare Convey, and design was done by Caroline Holmqvist.

We are grateful to the authors, contributors and companies who have provided the images used within these case studies. Images cannot be reproduced without their permission.

The Business Innovation Facility (BIF) is a pilot project funded by the UK Department for International Development (DFID). It is managed for DFID by PricewaterhouseCoopers LLP in alliance with the International Business Leaders Forum and Accenture Development Partnerships. It works in collaboration with Imani Development, Intellecap, Renaissance Consultants Ltd, The Convention on Business Integrity and Challenges Consulting. The views presented in this publication are those of the author(s) and do not necessarily represent the views of BIF, its managers, funders or project partners and does not constitute professional advice.

We welcome feedback on our publications – please contact us at enquiries@businessinnovationfacility.org